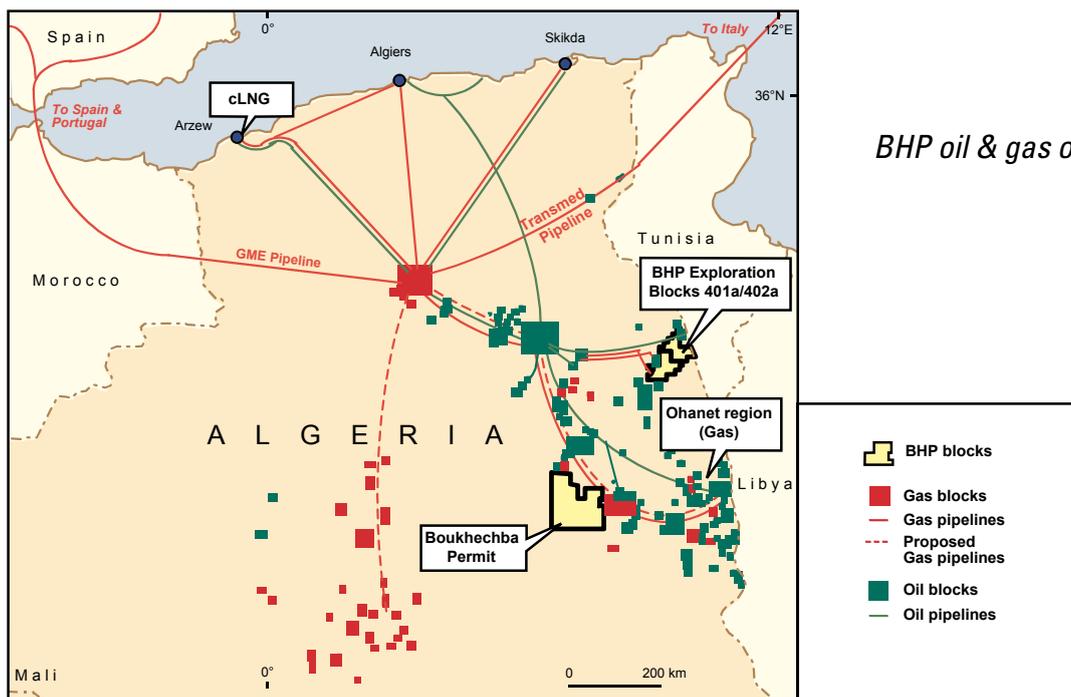


## The ROD Integrated Development - Algeria

June 2000

### Summary

- BHP has committed to the development of the major Blocks 401a/402a oil field accumulations situated in the Berkine Basin region of Algeria.
- The company and its partners have sanctioned the project, subject to formal gazettal by the Algerian government.
- The development forms part of BHP's effort to deliver significant value creating growth projects through both brownfield and greenfield opportunities in its Petroleum and Minerals businesses.
- Participants in Blocks 401a / 402a are BHP 45% (operator) and AGIP 55%.
- Five fields are to be developed - ROD, SFNE, RERN, BSF and RDB. The ROD accumulation extends into the neighbouring Block 403 concession - operated by SONATRACH and AGIP - and a Unitisation Agreement has therefore been put in place to govern joint operatorship and commercial arrangements.
- Under Algerian law - and written into the Production Sharing Contract governing development on the concession - foreign partners cannot receive more than 49% of total production from any field. This, combined with the Unitisation Agreement, gives BHP 17.3% of total project reserves.
- The fields have estimated proven and probable gross reserves of around 300 million barrels oil equivalent (MMboe), with a BHP share of 60 Mmboe (after grossing for Algerian tax). The fields will be developed via tie-ins to a new processing train at SONATRACH's existing BRN facilities on Block 403. Crude oil will be transported from BRN by SONATRACH via its existing pipeline infrastructure. The capital costs for the combined fields will be around US\$500million (US\$190 million net to BHP).
- The development will be executed by a SONATRACH / BHP joint team. After first oil the project will be operated by an organisation comprising SONATRACH and AGIP.
- First oil is targeted for the first half of 2003. Gross peak production will be 80,000 barrels of oil per day (bopd). Foreign partners may participate in field development and exploitation for up to 25 years.



## Strategic context

Development of the oil discoveries on Blocks 401a/402a is consistent with BHP Petroleum's strategy of focusing its exploration activities in areas where the company can acquire strategic advantage capable of delivering material shareholder value.

In addition to this development, the company is pursuing further exploration potential in Blocks 401a / 402a and holds an exploration licence for the Boukhechba area of central eastern Algeria.

Associated with its exploration activity, BHP Petroleum is also pursuing discussions relating to the execution of a liquids-rich gas development investment opportunity in the Ohanet region of Algeria. This would augment exploration activity through access to discovered but undeveloped resources complementing organic growth.

BHP is also working with SONATRACH to evaluate the potential application of the BHP proprietary compact LNG (cLNG) technology at its extensive gas liquefaction facilities in Arzew.

## Background

In June 1989, BHP Petroleum acquired an interest in two contiguous exploration tracts - Blocks 401a and 402a in the Berkine Basin region of Algeria. A Production Sharing Contract - signed between BHP and the state oil company, SONATRACH, in 1989 - laid down the terms and conditions for the eventual development of hydrocarbon discoveries on the Blocks 401a / 402a contract area.

The blocks are approximately 270km south east of Hassi Messaoud, the main oil province in the Algerian Sahara. Significant exploration success has occurred in the Basin over the last five years, with foreign operated ventures discovering in excess of an estimated five billion barrels (gross) of proved reserves.

Discoveries have been made in three of the blocks which bound Blocks 401a / 402a - those operated by CEPSA, Anadarko and AGIP. The ROD Integrated Development will be the ninth oil field development by foreign investors in the Berkine Basin.



*Seismic trucks in the Sahara desert*

## Exploration History

During the early 1990s, a drilling campaign by BHP across Blocks 401a / 402a led to the discovery of the Rhourde Debdada [RDB] and Rhourde Er Rouni North [RERN] fields; neither was deemed commercial at that time.

In 1997, the company began a new drilling campaign - this time focused on the western side of Block 402a - in parallel with an evaluation of extensive seismic data acquired across the area.

This led to the discovery of the Bir Sif Fatima North [BSFN] oil reservoir in May 1997 when BSFN-1 flowed at a maximum rate of 5,600 bopd. Rhourde Oulad Djemma [ROD] was discovered three months later - flowing 5,500 bopd through ROD-1. Appraisal wells BSFN-2 and ROD-2 were successfully drilled and tested in late 1997.

Subsequent well tests have also determined that BSFN is a major extension of the Bir Rebaa South East [BRSE] field on the adjacent Block 403 - operated by AGIP. The ROD, BSFN and BRSE accumulations are now collectively referred to as the ROD field.

The fourth accumulation in the development is Sif Fatima North East [SFNE], discovered in April 1998 when SFNE-1 flowed a total 21,000 bopd from two pay zones within the same Triassic reservoir. Subsequent analysis has shown the SFNE field is separate from the main ROD accumulation.

A further field, Bir Sif Fatima [BSF], was discovered in 1998 when BSF-1 tested 6,600 bopd.

Since then, several appraisal wells have been completed, helping to define the field limits, reservoir distribution and structural configuration of the five fields.

## Reserves

The total estimated proven plus probable recoverable reserves for the fields are 300 million barrels (gross).

Under Algerian law - and written into the PSC - foreign entities cannot receive more than 49% of total production from any field. This, combined with the Unitisation Agreement with AGIP (see next section), reduces the BHP Petroleum interest to 17.3% (proved plus probable reserves of 60 million barrels net to BHP after grossing for Algerian tax).

Under the terms of the PSC, the foreign partners may participate in the development and exploitation of the fields for up to 25 years.

The oil produced from the fields is very similar in character to that sold on world markets as Saharan Blend. Saharan Blend is a light, sweet paraffinic crude with reasonable gasoline properties, good middle distillate yields and quality, plus an attractive cut of good quality residue suitable as direct feedstock.

For the past six years, Saharan blend has achieved a premium of around US\$0.50 / barrel above Dated Brent.

## Unitisation and Operatorship

Because the ROD field extends into the adjacent Block 403 acreage, a Unitisation Agreement has been signed between SONATRACH, AGIP, and BHP to govern joint operatorship and commercial arrangements. The separate SFNE, RERN, BSF and RDB fields will be developed in conjunction with the ROD unit as an integrated development. The cost sharing arrangements between the ROD unit and the other elements is addressed in the Unitisation Agreement.

The SONATRACH-AGIP interest in the ROD field has been provisionally set by the parties at approximately 25%. ROD represents approximately 87% of the integrated development reserves. A re-determination of block participation interests in ROD will be made during the first year of production.

The Blocks 401a / 402a fields will be developed through a new processing train at SONATRACH's existing BRN facilities.

Under the terms of the Agreement, SONATRACH, AGIP and BHP will form a Management Committee and execute operations in the unitised contract area via a joint operating body. The development will be executed by a SONATRACH/BHP joint team led by BHP Petroleum with seconded AGIP personnel. After first oil, the operations will be contracted to the existing BRN facility operator, SONATRACH/AGIP, with BHP Petroleum personnel seconded into the operations team.

## Development Plan

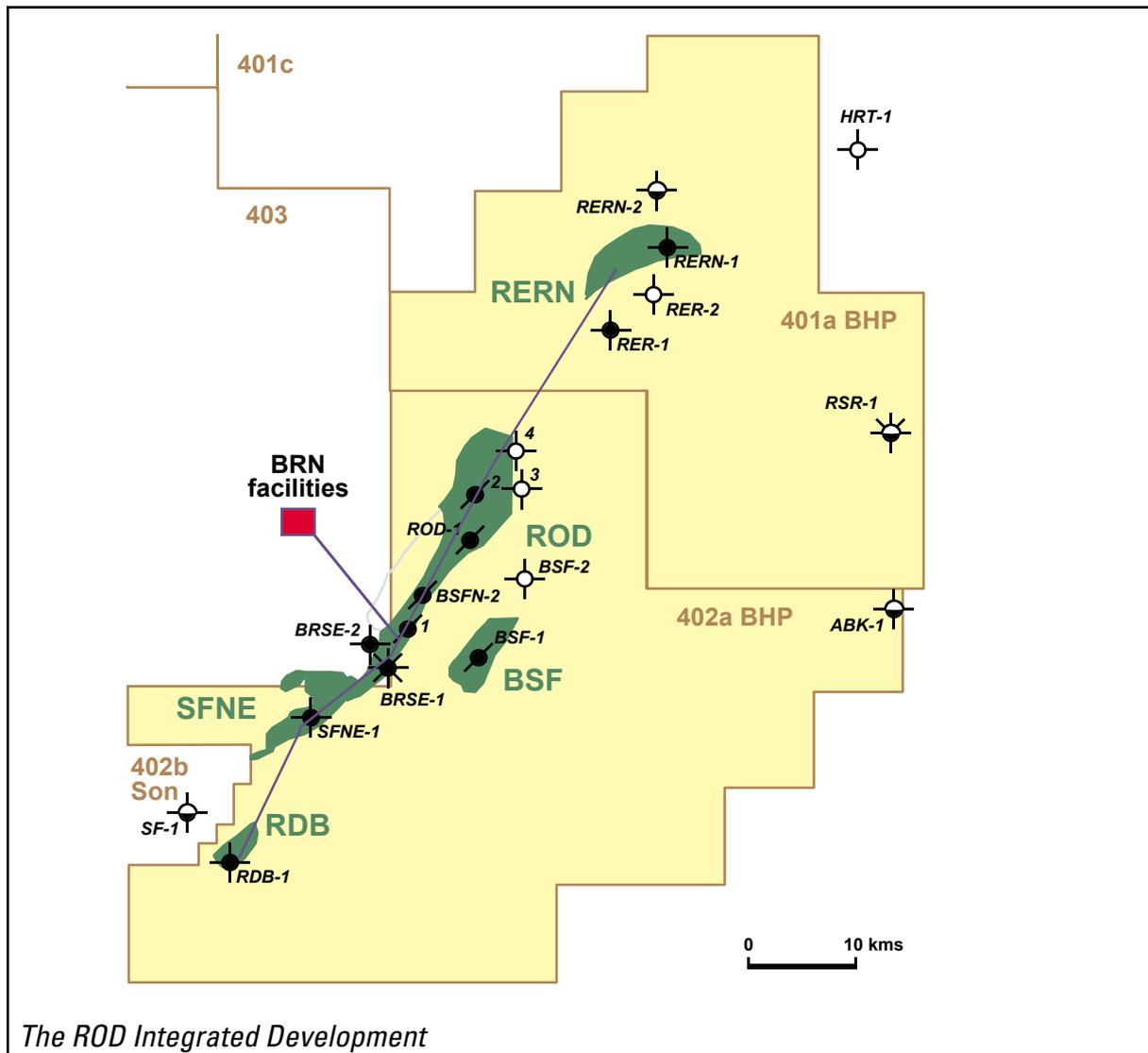
At plateau rate, the development will produce an estimated 80,000 bopd of crude and up to 170 million standard cubic feet per day (MMscf/d) of associated gas. Under the terms of the PSC for Blocks 401a / 402a, the foreign partners have no right to the associated hydrocarbon gas other than for use on site as fuel gas. The remainder will be re-injected into the reservoir.

First oil from the project is planned for the first half of 2003. The plan is to progressively commission and start up the production wells and gathering system, achieving peak rates within a few months of first oil. Plateau rates are expected to be maintained for several years.

The capital cost for the combined development is estimated at US\$500 million (US\$190 million net to BHP). Operating costs are estimated to be around US\$22.5 million (gross) a year.

The economic assessment of the project was undertaken evaluating various oil price, capital expenditure and operating expenditure scenarios. It provides an attractive Internal Rate of Return and is expected to deliver a strong earnings profile and significant cash flows.

Under the terms of the PSC, all royalty and taxes due on the production are paid by SONATRACH on behalf of its foreign partners.



## Facilities

The facilities and infrastructure required to receive and process well fluids extracted from the fields to the prescribed crude oil transport quality will include:

- 19 production wells, 13 water injection wells and 5 gas injection wells;
- a field gathering system comprising manifolds, test facilities and flowline pressure relief systems;
- a Central Processing Facility in which the well stream fluids will be processed in an oil stabilisation process train. The stabilised crude will be pumped into the existing SONATRACH pipeline transportation system;
- floating roof storage tanks for buffer storage of the crude to facilitate uninterrupted export to the pipeline system;
- various associated facilities including gas dehydration plant, gas compression equipment and water treatment equipment; and
- operations support infrastructure will be shared between the ROD and BRN developments. This includes the air strip, roads and personnel accommodation.

## Environment

An environmental screening study for the development has been prepared which identifies key environmental issues, mitigation strategies and regulatory requirements.

Environmental management plans have been developed for current exploration and appraisal seismic and drilling operations. A more detailed environmental impact assessment will be performed during the front end engineering design (FEED) stage. The project will define and adopt environmental standards consistent with BHP principles.

## The Production Sharing Contract

Foreign involvement in the Algerian oil and gas sector is typically governed by a Production Sharing Contract (PSC). The terms of such PSCs are negotiated on a project by project basis and, as such, display considerable variation. The entitlements of the foreign partners in Blocks 401a / 402a for any period during the PSC term will follow these basic steps:

### *Unitisation -*

the costs incurred in the ROD Integrated Development and the production will be split between the Blocks 401a / 402a and Block 403 "associations" in accordance with the provisions of the Unitisation Agreement.

### *Payment of Royalty -*

12.5% of gross production is paid as royalty.

### *Cost Recovery -*

the PSC defines the maximum portion of production available for recovery of capital and operating expenses. If the portion of production available for recovery of costs is insufficient, the unrecovered costs are carried forward to the next period. If the portion of production available exceeds that required for cost recovery, then the excess becomes part of the profit pool (see below).

### *Computation of Profit Share -*

the portion of production left after cost recovery becomes the available profit pool. A percentage of this pool is made available to the foreign partners as their profit - the percentage varies with production rate.

### *Allocation of Entitlement -*

the above determined portions of production due to the foreign partners for cost recovery and profit are checked to ensure that the total does not exceed 49% of total production. If it does then the amount due to the foreign partners is reduced accordingly and the volume reduction is carried forward to the next period. In the Blocks 401a / 402a PSC, there are contract-specific variations to this general rule which provide for overlifts in the first and second years and a corresponding correction in the sixth year of production.

The process detailed above means the foreign partners' share of annual production varies from year to year as a function of costs, price and production.



*Drilling activity on Block 401a*

## Hydrocarbons in Algeria

Hydrocarbons form the backbone of the Algerian economy - accounting for 52% of government revenues, 25% of the country's GDP and virtually all of its export earnings.

The country is a prolific hydrocarbons province with a well-developed oil and gas infrastructure. Each day it exports more than 1.2 million barrels of liquids (of which two thirds is oil, one third condensate) and around 180 million standard cubic metres of gas, making it the world's second largest gas exporter. Until fairly recently, it was also the world's largest producer of LNG.

SONATRACH is the Algerian national company charged with conducting all petroleum exploration, production, transportation and marketing activities in Algeria. SONATRACH obtains title to exploration and exploitation licences from the state and sub-contracts selected petroleum exploration and exploitation projects to third parties - mostly foreign E&P companies under Production Sharing Contracts.

Algerian fiscal terms reflect the prospectivity of the area, the perceived technical risk of achieving a commercial development in the event of a discovery and the consequent high level of international competition. Exploration success rates in Algeria are among the highest in the world, the technology required for onshore developments is well proven and the country has therefore become an important focus for many international oil and gas companies.

To date, the oil and gas sector has been virtually unaffected by the violence which has afflicted Algeria since the early 1990s. The country's oil and gas fields are located in fairly remote areas and a high level of military attention is afforded to the industry by the Government - reflecting the critical importance of oil and gas to the Algerian economy.

At the core of this are four exclusion zones, created in April 1995 to protect the country's oil and gas facilities. Traffic into these areas is regulated by the security forces. In addition, hydrocarbon sites within the zone are protected by individual army contingents.

Coupled with each company's own security arrangements, these safeguards have worked well to protect both personnel and assets.

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